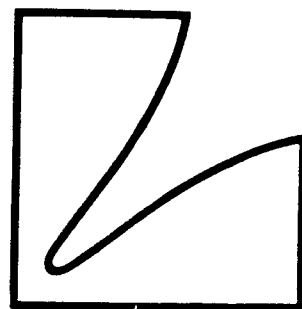
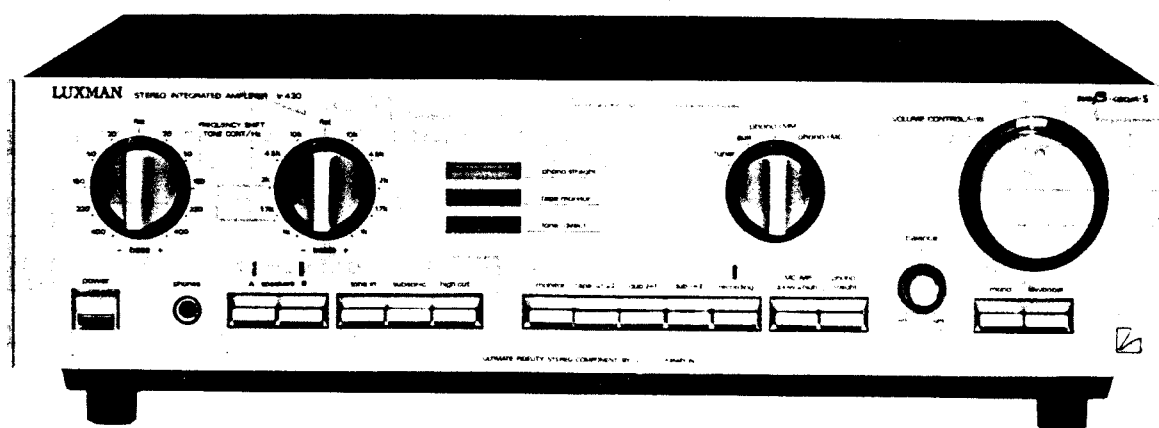


SERVICE MANUAL



DUO-BETA CIRCUIT STEREO
INTEGRATED AMPLIFIER

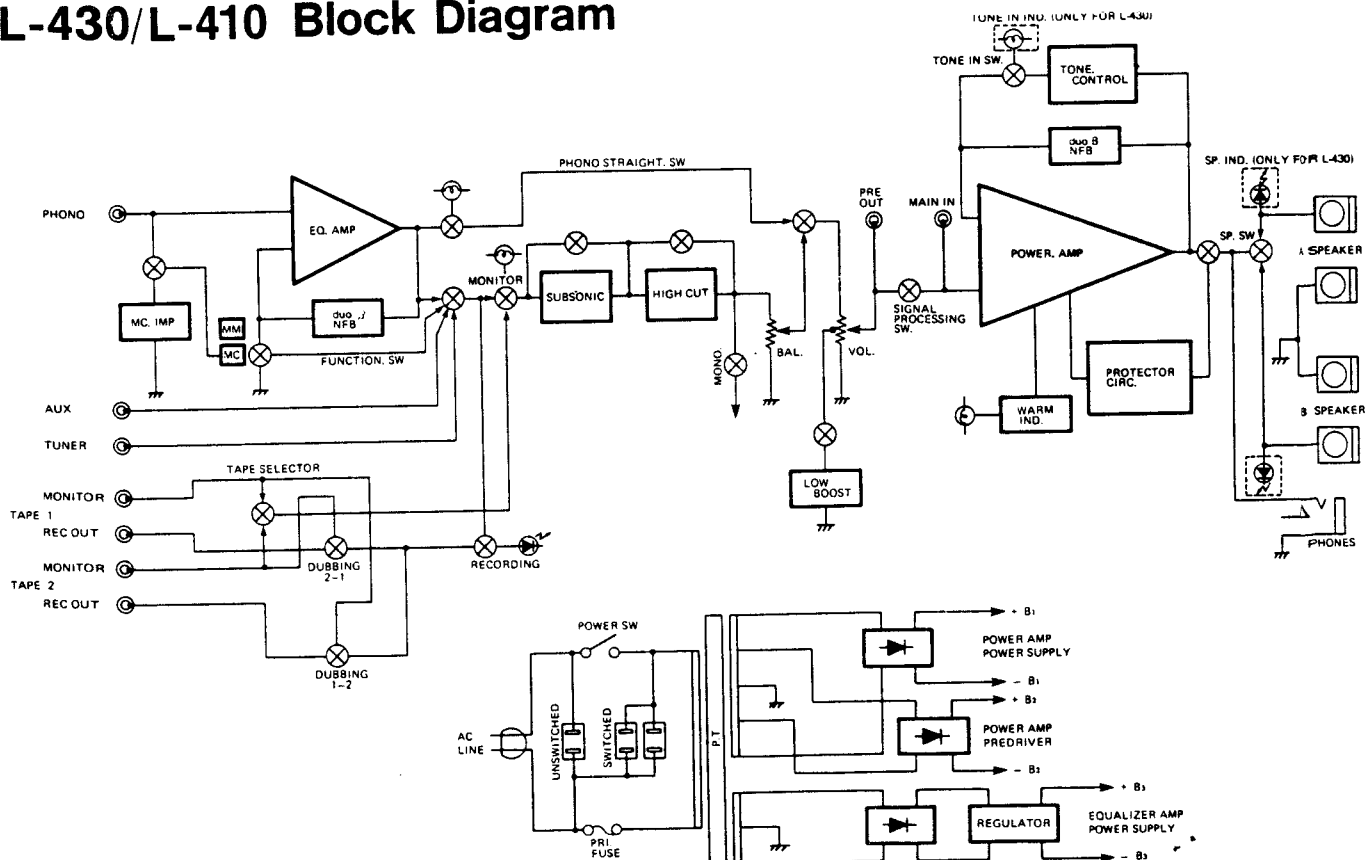
L-430/L-410



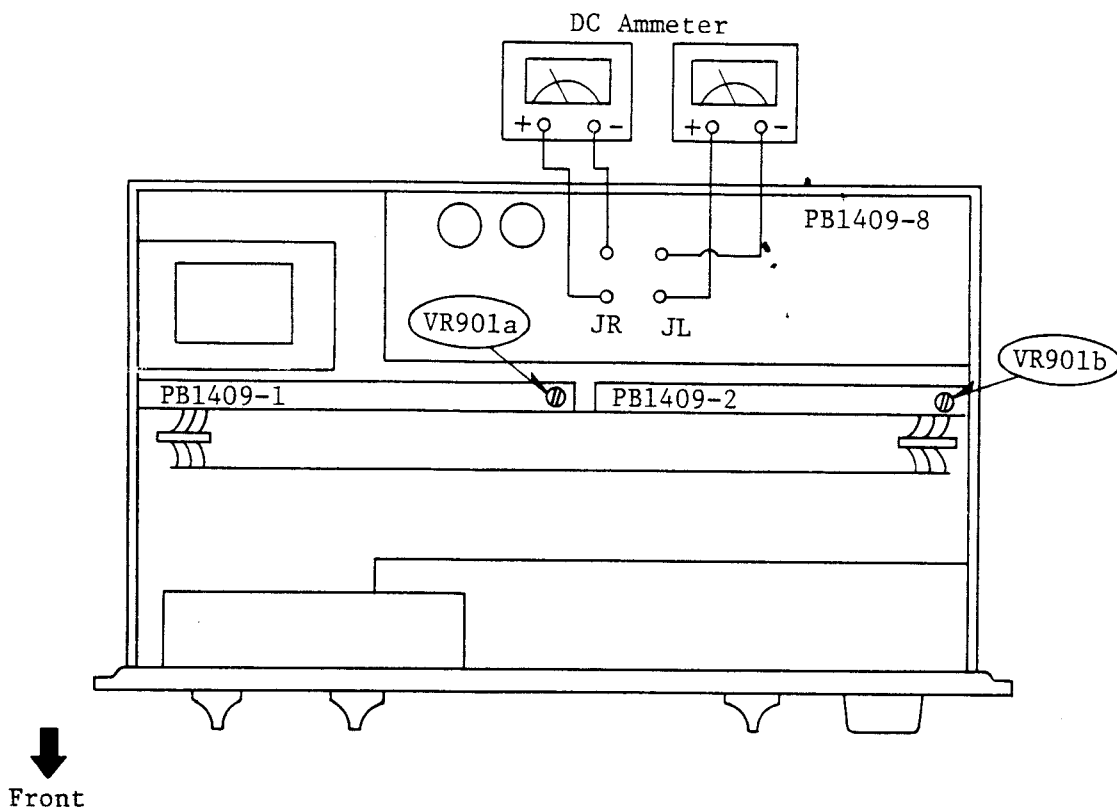
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L-430/L-410 Block Diagram

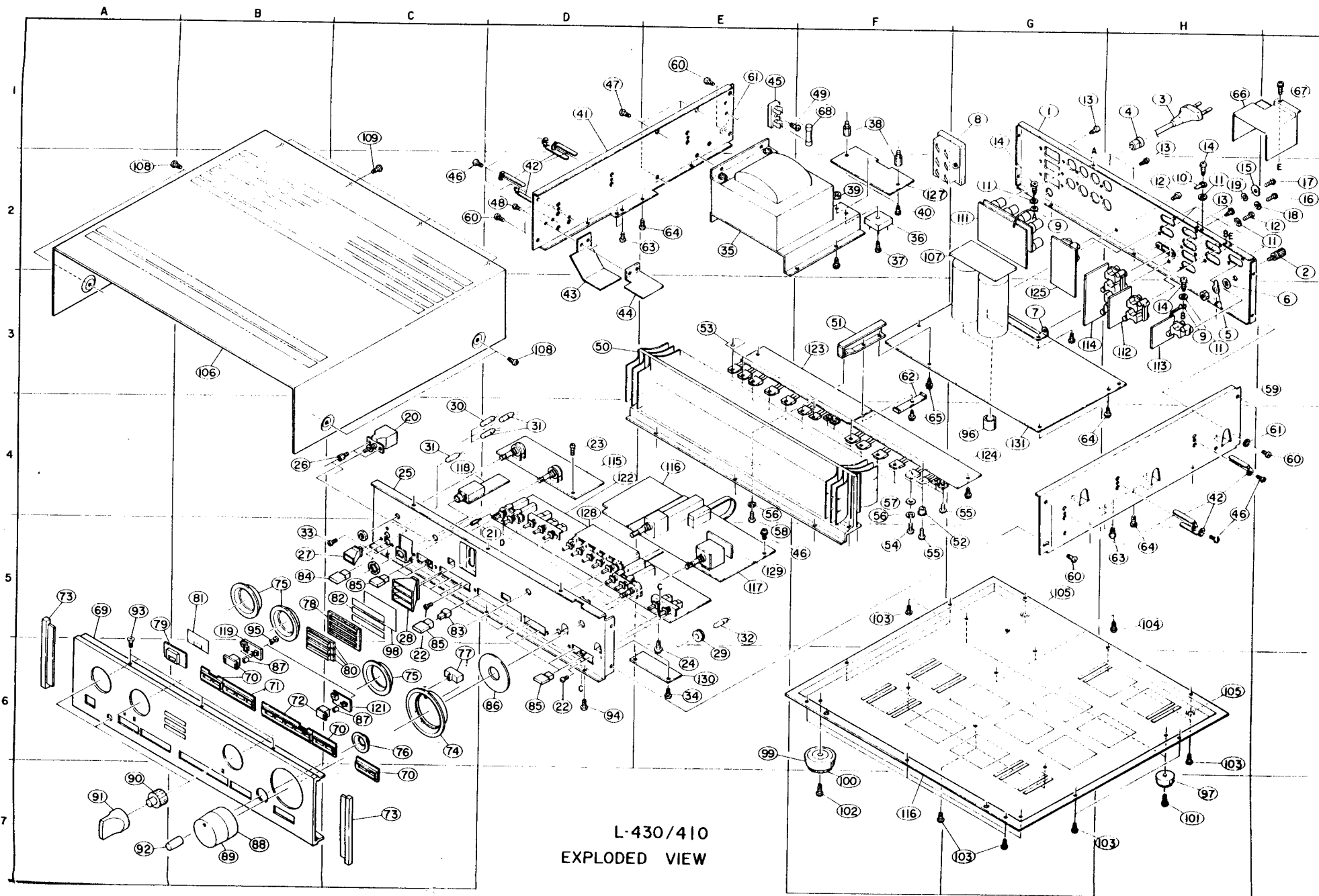


Adjustment Procedures



Bias (Idle) Current Adjustment

1. Disconnect the wires on the PB-1409A-8 from the pins (JL & JR).
2. Connect an DC Ampere Meter between the pins and wires as shown in the figure. But in that case, make sure each polarity is correct.
3. Make the power switch ON and after 3 minutes. Adjust VR901a (L-ch) on the PB-1409A-1 and VR901b (R-ch) on the PB-1409A-2 to make the idling current $60\text{mA} \pm 10\text{mA}$ (L-430), $50\text{mA} \pm 10\text{mA}$ (L-410).
4. Connect the wires to the pins after adjustment.

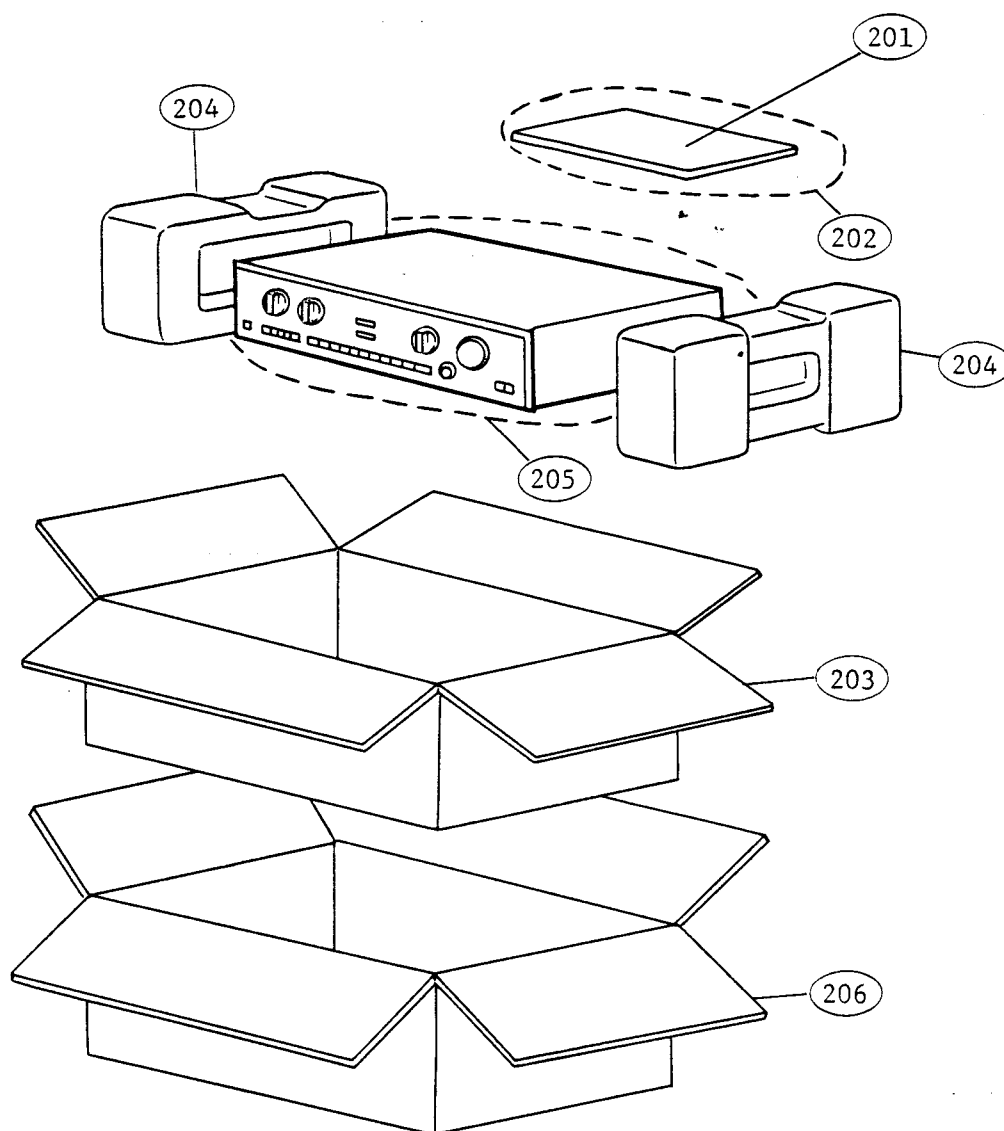


L-430/410
EXPLODED VIEW

Index	Symbol No.	Stock No. L410	Stock No. L430	Description	
G-1	1	UC1220-4	UC1220-1	Back Panel	(J)
		UC1220-5	UC1220-2	Back Panel	(E,U)
		UC1220-6	UC1220-3	Back Panel	(S)
I-2	2	AG0048	AG0048	GND Terminal	
H-1	3	BK0022	BK0022	AC Cord	(SD)(SK)
		BK0023	BK0023	AC Cord	(SG)
		BK0035	BK0035	AC Cord	(J)
		BK0036	BK0036	AC Cord	(SB)
		BK0062	BK0062	AC Cord	(EK)
		BK0067	BK0067	AC Cord	(U,EZ)
H-1	4	BU0033	BU0033	Cord Stopper	(EK,EZ,J,SD,U,SK)
		BU0039	BU0039	Cord Stopper	(SB,SG)
H-3	5	YZB060H	YZB060H	Earth Lug	
I-3	6	YWD060A	YWD060A	Toothed Lock Washer 6 ϕ	
G-3	7	UR1316	UR1316	Bracket	
G-1	8	AC0016	AC0016	AC Outlet 3P	(E,J)
		AC0017	AC0017	AC Outlet 1P	(UP)
H-3/G-2	9	YZB030X	YZB030X	Earth Lug	
H-2	10	YZB030H	YZB030H	Earth Lug B-5	
G-2/I-2	11	YWE030S	YWE030S	Toothed Lock Washer 3 ϕ	
H-2/I-2	12	YAA30C06	YAA30C06	Bind Scr. M3x6 Blk	
H-1/G-1	13	YJB30C08	YJB30C08	Tpg. Bind Scr. M3x8 Blk	
H-1/G-1	14	YJB30A06	YJB30A06	Tpg. Bind Scr. M3x6	
H-2	15	WZ0070	WZ0070	Changeover Disk	
I-2	16	YAA26C04	YAA26C04	Bind Scr. M2.6x4	
I-2	17	YAA26C06	YAA26C06	Bind Scr. M2.6x6	
I-2	18	YWE026S	YWE026S	Toothed Lock Washer	
H-2	19	YWA030U	YWA030U	Nylon Washer	
C-4	20	SP0032	SP0032	Power SW	(U)
		SP0090	SP0090	Power SW	(E,S)
		SP0172	SP0172	Power SW	(J)
D-5	21	US0003	US0003	Stand,PCB	
D-6/C-6	22	YAA30A06	YAA30A06	Bind Scr. M3x6	
D-4	23	YJB30A06	YJB30A06	Tpg. Bind Scr. M3x6	
E-6	24	YEB30A06	YEB30A06	Sems Bind Scr. M3x6	
C-4	25	UB1079	UB1079	Sub Panel	
B-4	26	US1068	US1068	Stand 1068	
B-5	27	UN1049	UN1049	Lamp Holder	
C-5	28	UN1050	UN1050	Lamp Holder	
		WU1035	WU1035	Filter	
E-6	29	UZ1077	UZ1077	Gum Bush	
C-4	30	AL0072	AL0072	Lamp 24V 40mA Phone Straight	
D-4/C-4	31	AL0073	AL0073	Lamp 24V 40mA Tone Direct/Tape monitor/Warm UP	
E-5	32	AL0074	AL0074	Lamp 24V 40mA Power IND.	
B-5	33	YAA30A04	YAA30A04	Bind Scr. M3x4	
E-6	34	YEB30A06	YEB30A06	Sems Bind Scr. M3x6	
E-2	35	PT2622	PT2619	Power Trans	(E,S)
		PT2623	PT2620	Power Trans	(J)
		PT2624	PT2621	Power Trans	(U)
F-2	36	TD0110	TD0110	Bridge Diode S5VB40-F	
F-2	37	YJB30A14	YJB30A14	Tpg. Bind Scr. M3x14	
F-1	38	US1068	US1068	Stand	(E,S)
F-2	39	YNK030A	YNK030A	Flange Nut 3 ϕ	(E,S)
F-2	40	YJB40A06	YJB40A06	Tpg. Bind Scr. M4x6	
		YAA30A04	YAA30A04	Bind Scr. M3x4	
D-1	41	UD1058	UD1058	Side Panel L	
H-4/D-2	42	UZ1114	UZ1114	Bracket	
D-3	43	UW1191	UW1191	Spacer	
D-3	44	UK1134	UK1134	Shield Plate	
E-1	45	Non Use	AH0016	Fuse Holder	(J)
F-5/C-2	46	YJB30A06	YJB30A06	Tpg. Bind Scr. M3x6	
D-1	47	YJB40A08	YJB40A08	Tpg. Bind Scr. M4x8	
D-2	48	YAA30A06	YAA30A06	Bind Scr. M3x6	
F-1	49	Non Use	YJB30A08	Tpg. Bind Scr. M3x8	(J)
D-3	50	BE1094	BE1094	Heat Sink	

Index	Symbol No.	Stock No. L410	Stock No. L430	Description
F-3	51	URL385	URL385	Bracket
G-5	52	BU0065	BU0065	Bushing
E-3	53	BU0221	BU0221	Mica Sheet
F-5/E-3	54	YAA30A10	YAA30A10	Bind Scr. M3x10
G-4/F-5	55	YAA30A08	YAA30A08	Bind Scr. M3x8
F-4/E-4	56	YWC030A	YWC030A	Spring Washer 3/8
F-4	57	YWA030A	YWA030A	Flat Washer 3/8
E-5	58	YAA30A06	YAA30A06	Bind Scr. M3x6
I-3	59	UD1059	UD1059	Side Panel R
C-2/I-4	60	YJB40A08	YJB40A08	Tpg. Bind Scr. M4x8
E-1/I-4	61	YWE040S	YWE040S	Toothed Lock Washer
F-3	62	URL384	URL384	Bracket
H-5/E-2	63	YJB40A08	YJB40A08	Tpg. Bind Scr. M4x8
G-4/E-2	64	YEB30A06	YEB30A06	Sems Bind Scr. M3x6
F-4	65	YEB30A06	YWB30A06	Sems Bind Scr. M3x6
H-1	66	UK1133	UK1133	Shield Plate
I-1	67	YEB30A06	YEB30A06	Sems Bind Scr. M3x6
F-1	68	Non Use	BF0140	Fuse MF60NR-7A (J)
A-5	69	WA1258-4	WA1258-3	Front Panel
C-6/B-6	70	WD1153	WD1153	Escutcheon
B-6	71	WD1154	WD1154	Escutcheon
B-6	72	WD1155	WD1155	Escutcheon
C-7/A-5	73	WC1040	WC1040	Ornamental Side Panel
C-6	74	WD1140-1	WD1140-1	Escutcheon
C-6/B-5	75	WD1141-1	WD1141-1	Escutcheon
C-6	76	WD1156	WD1156	Escutcheon
C-6	77	WG1020	WG1020	Pilot
B-5	78	UL1010	UL1010	Masking Gum
A-5	79	WE1120	WE1120	Protector
C-6	80	WE1121	WE1121	Protector
B-5	81	WU1031	WU1031	Filter
C-5	82	WU1033	WU1033	Filter
C-5	83	UZ1378	UZ1378	Extension Shaft
B-5	84	WJ1171-2	WJ1171-2	Mold Knob
D-6/C-5	85	WJ1189	WJ1189	Mold Knob
D-6	86	WQ5005	WQ5005	Filter
C-6/B-6	87	UL1011	UL1011	Masking Gum
B-7	88	WJ1163	WJ1163	Mold Knob
B-7	89	WK1135-3	WK1135-3	Metal Knob
A-7	90	WJ1164	WJ1164	Mold Knob
A-7	91	WK1140	WK1140	Metal Knob
A-7	92	WJ1190	WJ1190	Mold Knob
A-5	93	YJE30A06	YJE30A06	Flat Tpg. Scr. M3x6
D-6	94	YJB30C06	YJB30C06	Tpg. Bind Scr. M3x6 Blk
B-5	95	YRA35C55	YRA30C55	Rivet 3.5x5.5 Blk
G-4	96	UW1192	UW1192	Spacer
H-7	97	WN1032	WN1032	Trannleg (J)
		WN0007	WN0007	Trannleg (E,S,U)
C-6	98	WU1034	WU1034	Filter
E-6	99	WN1026	WN1026	Mold Foot (J)
		WN1024	WN1024	Metal Foot (J)
		WN0007	WN0007	Trannleg (E,S,U)
F-7	100	WN1025	WN1025	Felt for Foot (J)
		WN0007	WN0007	Trannleg (E,S,U)
H-7	101	YJB40C12	YJB40C12	Tpg. Bind Scr. M4x12
F-7	102	YJB40C14	YJB40C14	Tpg. Bind Scr. M4x14 (J)
		YJB40C12	YJB40C12	Tpg. Bind Scr. M4x12 (E,S,U)
G-7/F-5	103	YJB30C06	YJB30C06	Tpg. Bind Scr. M3x6 Blk
H-5	104	YJB40C08	YJB40C08	Tpg. Bind Scr. M4x8 Blk
H-6/G-5	105	YWE030S	YWE030S	Toothed Lock Washer 3/8
B-3	106	UG1039	UG1039	Bonnet
F-2	107	UW1193	UW1193	Spacer
D-3	108	YJB40C08	YJB40C08	Tpg. Bind Scr. M4x8
C-1	109	YJB30C06	YJB30C06	Tpg. Bind Scr. M3x6
G-2	111			PB-1408-1 Ass'y
H-3	112			PB-1408-2 Ass'y
H-3	113			PB-1408-3 Ass'y
G-4	114			PB-1408-4 Ass'y
D-5	115			PB-1408-5 Ass'y
F-7	116	UE1122	UE1122	Bottom Plate
E-5	117			PB-1408-7 Ass'y
C-4	118			PB-1408-8 Ass'y
C-6	121			PB-1408-11 Ass'y
D-4	122			PB-1408-12 Ass'y
F-3	123			PB-1409A-1 Ass'y
G-4	124			PB-1409A-2 Ass'y
G-3	125			PB-1409A-3 Ass'y
F-2	127			PB1409A-4 Ass'y (ES)
				PB1408A-10 Ass'y (J,U)
D-4	128			PB-1409A-5 Ass'y
G-4	131			PB-1409A-8 Ass'y

Packing Material Parts List



Symbol No.	Stock No. L410	Stock No. L430	Description
201	MA0161-2	MA0161-2	Owner's Manual (J)
	ME0248	ME0248	Owner's Manual
202	XC1031	XC1031	Plastic Bag
203	XA1329	XA1327	Carton
204	XB1067	XB1067	Styrol
205	XC1018A	XC1018A	Plastic Bag
206	XH1065	XH1065	Outer Carton (E,S,U)

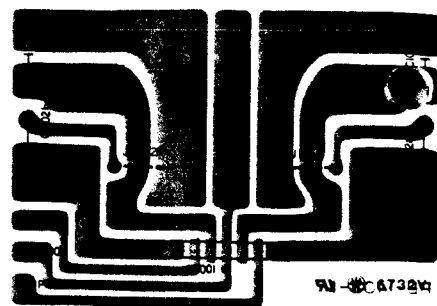
PB-1408-1 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Speaker Terminal)			
	AT0153	AT0153	8P YKD31-0134
(Capacitor)			
C1001a,b	CQ0041	CQ0041	1000pF 50V St (SD)
C1002a,b	CQ0041	CQ0041	1000pF 50V St (SD)

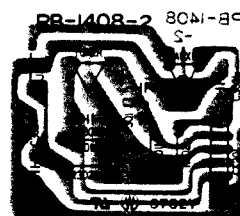
PB-1408-2 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Pin Jack)			
	AT0151	AT0151	4P T5754-AA Aux,Tuner
(Capacitor)			
C301a,b	CQ1401	CQ1401	1000pF 50V St (SD)
C302a,b	CQ1401	CQ1401	1000pF 50V St (SD)
(Resistor)			
R301a,b	RB0254	RB0254	1M 1/4W Rd
R302a,b	RB0254	RB0254	1M 1/4W Rd

PB-1408-1



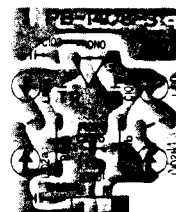
PB-1408-2



PB-1408-3 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Pin Jack)			
	AT0152A	AT0152A	2P T5753-BA Phono
(Choke Coil)			
L101a,b	LA1065	LA1065	S-471J (SD)
L102a,b	LA1065	LA1065	S-471J (SD)
(Capacitor)			
C101a,b	CQ1407	CQ1407	150pF 50V St (SD)
C102a,b	CQ1407	CQ1407	150pF 50V St (SD)
C103	Non Use	CQ0009	0.047uF 50V My (SD)
(Resistor)			
R101a,b	RB0180	RB0180	820 1/4W Rd (SD)

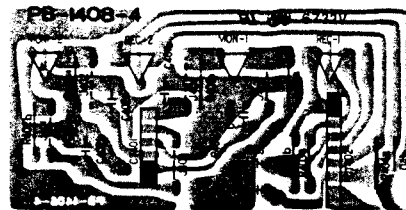
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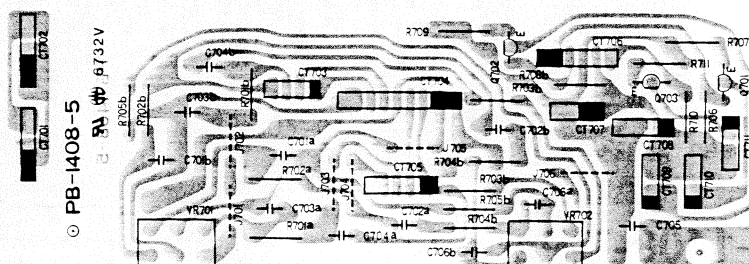


PB-1408-4 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Pin Jack)			
	AT0151	AT0151	4P T5754-AA(Moni-1 Rec-2)
	AT0151	AT0151	4P T5754-AA(Moni-2 Rec-1)
(Capacitor)			
C401a,b	CQ1401	CQ1401	1000pF 50V St (SD)
C402a,b	CQ1401	CQ1401	1000pF 50V St (SD)
C403	CK0140	CK0140	0.047uF 50V Ce
C404	CK0140	CK0140	0.047uF 50V Ce
(Resistor)			
R401a,b	RB0254	RB0254	1M 1/4W Rd
R402a,b	RB0254	RB0254	1M 1/4W Rd
R403a,b	RB0254	RB0254	1M 1/4W Rd
R404a,b	RB0254	RB0254	1M 1/4W Rd

PB-1408-4

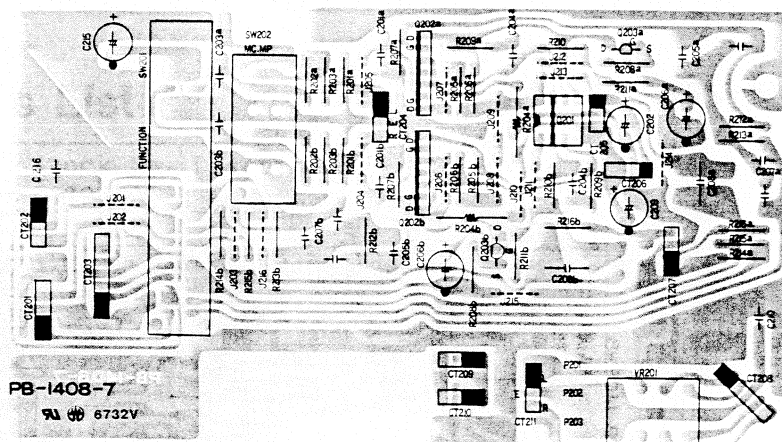




PB-1408-5 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Variable Resistor)			
VR701	RV0295	RV0295	V16 K162A-50KEE Bass
VR702	RV0295	RV0295	V16 K162A-50KEE Treble
(Transistor)			
Q701		TR0351	2SC2320
Q702	TR0351	TR0351	2SC2320
Q703	TR0351	TR0351	2SC2320
(Capacitor)			
C701a,b	CQ0010	CQ0010	0.039uF 50V My
C702a,b	CQ0013	CQ0013	0.022uF 50V My
C703a,b	CQ0178	CQ0178	0.12uF 50V My
C704a,b	CQ0007	CQ0007	0.068uF 50V My
C705	CE1753	CE1753	4.7uF 50V El
C706a,b	CQ5078	CQ5078	470pF 50V St
**	CE1977B	CE1977B	4.7uF (BP) 50V El
(Resistor)			
R701a,b	RB0190	RB0190	2.2K 1/4W Rd
R702a,b	RB0202	RB0202	6.8K 1/4W Rd
R703a,b	RB0166	RB0166	220 1/4W Rd
R704a,b	RB0178	RB0178	680 1/4W Rd
R705a,b	RB0174	RB0174	470 1/4W Rd
R706		RB0198	4.7K 1/4W Rd
R707		RB0136	12 1/4W Rd
R708	RB0198	RB0198	47K 1/4W Rd
R709	RB0136	RB0136	12 1/4W Rd
R710	RB0198	RB0198	4.7K 1/4W Rd
R711	RB0136	RB0136	12 1/4W Rd

PB-1408-7



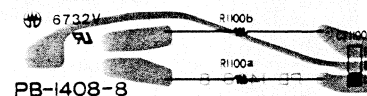
PB-1408-7 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Variable Resistor)			
VR201	RV0296	RV0296	K272A0100K Volume
(Switch)			
SW201	SR0173	SR0173	Rotary SRZW-84S Function
SW202	SS0150	SS0150	Slide SUFR2435
(IC & FET)			
Q201	TC0187	TC0187	NJM4556D-H
Q202a,b	TF0035	TF0035	2SK270 Dual (SD)
		TF0037	2SK147 (J)
Q203a,b	TF0030	TF0030	2SK117Y
(Capacitor)			
C201a,b	CM0056	CM0056	33pF 50V Mi
C202	CE1731	CE1731	47uF 25V E1
C203a,b	CQ5077	CQ5077	330pF 50V St
C204a,b	CQ1436	CQ1436	4700pF 50V St
C205a,b	CQ0253	CQ0253	0.1uF 50V My
C206a,b	CE1717	CE1717	10uF 16V E1
C207a,b	CQ0123	CQ0123	0.027uF 50V My
C208a,b	CE1977B		4.7uF 50V
	CE1977B		4.7uF BF 50V E1
		CQ2011	3.3uF 250V My
C209	CE1731	CE1731	47uF 25V E1
C210	CQ1436	CQ1436	4700pF 50V St
C216	CQ1436	CQ1436	4700pF 50V E1
(Resistor)			
R201a,b	RB0222	RB0222	47K 1/4W Rd
R202a,b	RB0158	RB0158	100 1/4W Rd
R203a,b	RB0166	RB0166	220 1/4W Rd (E,S,U)
R204a,b	RD2586	RD2586	1.5K 1/2W Rd
R205a,b	RB0182	RB0182	1K 1/4W Rd
R206a,b	RB0180	RB0180	820 1/4W Rd
R207a,b	RB0148	RB0148	39 1/4W Rd (E,S,U)
R208a,b	RB0168	RB0168	270 1/4W Rd
R209a,b	RB0154	RB0154	68 1/4W Rd
R210a,b	RB0260		1.8K 1/4W Rd
		RB0258	1.5K 1/4W Rd
R211a,b	RB0254	RB0254	1M 1/4W Rd
R212a,b	RB0218	RB0218	33K 1/4W Rd
R213a,b	RB0192	RB0192	2.7K 1/4W Rd
R214a,b	RB0156	RB0156	82 1/4W Rd
R215a,b	RB0188	RB0188	1.8K 1/4W Rd
R216a,b	RB0150	RB0150	47 1/4W Rd

PB-1408-8

PB-1408-8 Parts List

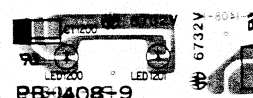
Symbol No.	Stock No. L410	Stock No. L430	Description
(Phone Jack)			
	AJ0022	AJ0022	HLJ0305-01-020
(Resistor)			
R1100a,b	RS5030	RS5030	470 3W Rf



PB-1408-9

PB-1408-9 Parts List

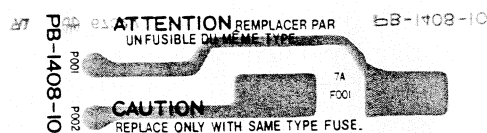
Symbol No.	Stock No. L410	Stock No. L430	Description
(LED)			
LED1200	Non Use	TD0237	SLB-15UU5
LED1201	Non Use	TD0237	SLB-15UU5



PB-1408-10

PB-1408-10 Parts List

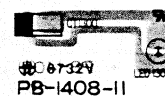
Symbol No.	Stock No. L410	Stock No. L430	Description
(Fuse Holder)			
F001	AH0029	Non Use	YSH-401T
(Fuse)			
F001	BF0082	Non Use	ULCS-MF61ML-5A (U)
	BF0121	Non Use	MF61ML-6A (J)



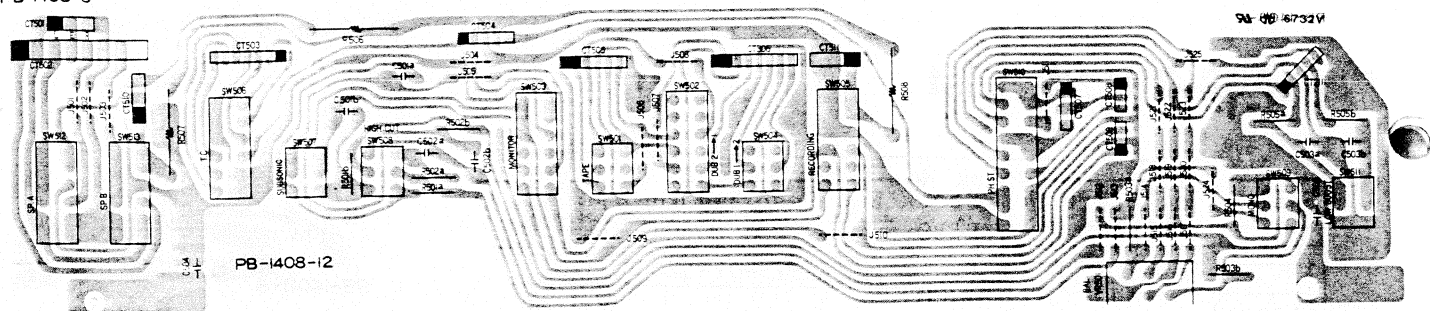
PB-1408-11

PB-1408-11 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(LED)			
LED1300	TD0237	TD0237	SLB-15UU5



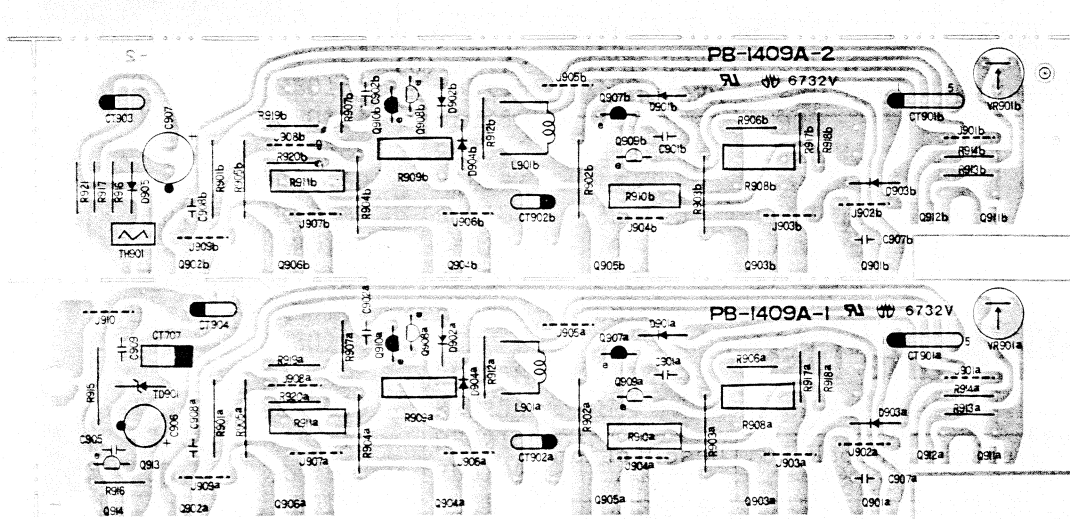
PB-1408-12
PB-1408-8



PB-1408-12 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Switch)			
SW501-505	SP0282	SP0282	Push SUF53
SW506-508	SP0281	SP0281	Push SUN331A
SW509,511	SP0280	SP0280	Push SUN231A
SW510	SP0283	SP0283	Push SUF23
SW512,513	SP0262	SP0262	Push SUF23
(Capacitor)			
C501a,b	CQ0004	CQ0004	0.015uF 50V My
C502a,b	CQ0027	CQ0027	6800pF 50V My
C503a,b	CQ0011	CQ0011	0.33uF 50V My
C504	CK0140	CK0140	0.047uF 50V Ce
C505	CK0140	CK0140	0.047uF 50V Ce
(Variable Resistor)			
VR501	RV0294	RV0294	V16 K162A-250KMN Balance
(Resistor)			
R501a,b	RB0192	RB0192	2.7K 1/4W Rd
R502a,b	RB0254	RB0254	1M 1/4W Rd
R503a,b	RB0202	RB0202	6.8K 1/4W Rd
R504a,b	RB0254	RB0254	1M 1/4W Rd
R505a,b	RB0208	RB0208	12K 1/4W Rd
R506		RS2940	2.2K 2W Rf
R507		RS2940	2.2K 2W Rf
R508	RS2940	RS2940	2.2K 2W Rf

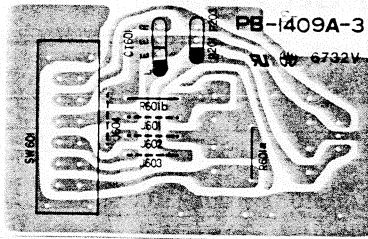
PB-1409A-1
PB-1409A-2



PB-1409A-1,2 Parts List

Symbol No.	Stock No.	Stock No.	Description
	L410	L430	
(Variable Resistor)			
VR901a,b	RT0006	RT0006	Semi SR19R-330B
(Choke Coil)			
L901a,b	LA1020	LA1020	LUX-1020
(Thermistor)			
TH901	TV0011	TV0011	TD5-C320
(Transistor)			
Q901a,b	TR0299	TR0299	2SC2238B
Q902a,b	TR0298	TR0298	2SA968B
Q903a,b	TR0380	TR0380	2SC3182
Q904a,b	TR0379	TR0379	2SA1265
Q905a,b	Non Use	TR0380	2SC3182
Q906a,b	Non Use	TR0379	2SA1265
Q907a,b	TR0314	TR0314	2SA999
Q908a,b	TR0351	TR0351	2SC2320
Q909a,b	TR0351	TR0351	2SC2320
Q910a,b	TR0314	TR0314	2SA999
Q911a,b	TR0334	TR0334	2SC1903
Q912a,b	TR0334	TR0334	2SC1903
Q913	TR0351	TR0351	2SC2320
Q914	TR0139	TR0139	2SD880
(Capacitor)			
C901a,b	CQ0019	CQ0019	0.0047uF 50V My
C902a,b	CQ0019	CQ0019	0.0047uF 50V My
C905	CK0140		0.047uF 50V Ce
C906	CE1732		100uF 25V E1
C907	CE1722	CE1722	220uF 16V E1
C907a,b	CM0125	CM0125	47pF 500V Mi
C908a,b	CM0125	CM0125	47pF 500V Mi
C909	CK0140		0.047uF 50V Ce
(Zener Diode)			
TD901	TD0085	TD0085	WZ-230
(Diode)			
D901a,b	TD0227	TD0227	1SS41
D902a,b	TD0227	TD0227	1SS41
D903a,b	TD5025	TD5025	1S2462
D904a,b	TD5025	TD5025	1S2462
D905a,b	Non Use	TD0227	1SS41
(Resistor)			
R901a,b	RS2513L		120 1/2W Rf
R902a,b		RS2564	4.7 1/2W Rf
R903a,b	RS2564L	RS2564L	4.7 1/2W Rf
R904a,b	RS2564L	RS2564L	4.7 1/2W Rf
R905a,b		RS2564	4.7 1/2W Rf
R906a,b	RB0166	RB0166	220 1/4W Rd
R907a,b	RB0160		120 1/4W Rd
R908a,b	RG0075		0.22 5W Rc
		RG0102	0.22 3W Rc
R909a,b	RG0075		0.22 5W Rc
		RG0102	0.22 3W Rc
R910a,b		RG0102	0.22 3W Rc
R911a,b		RG0102	0.22 3W Rc
R912a,b	RD2526	RD2526	4.7 1/4W Rd
R913a,b	RB0192	RB0192	2.7K 1/4W Rd
R914a,b	RB0184	RB0184	1.2K 1/4W Rd
R915	RS2524L	RS2524L	1K 1/2W Rf
R916	RB0270	RB0270	4.7M 1/4W Rd
R916a,b	RB0174	RB0174	470 1/4W Rd
R917	RB0214	RB0214	22K 1/4W Rd
R917a,b	RB0174	RB0174	470 1/4W Rd
R918a,b	RB0174	RB0174	470 1/4W Rd
R919a,b		RB0198	4.7K 1/4W Rd
R920a,b		RB0198	4.7K 1/4W Rd
R921	RB0236	RB0236	180K 1/4W Rd

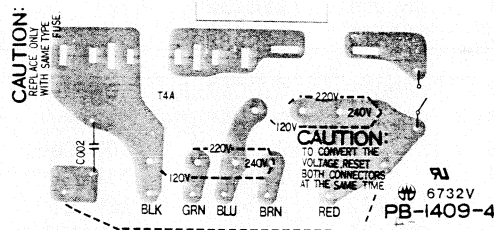
PB-1409A-3



PB-1409A-3 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Switch)			
SW601	SS0135	SS0135	Slide SSB04202
(Resistor)			
R601a,b	RB0222	RB0222	47K 1/4W Rd
(Pin Jack)			
	AT0150	AT0150	4P T5757-AA

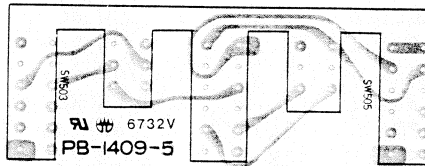
PB-1409-4



PB-1409A-4 Parts List

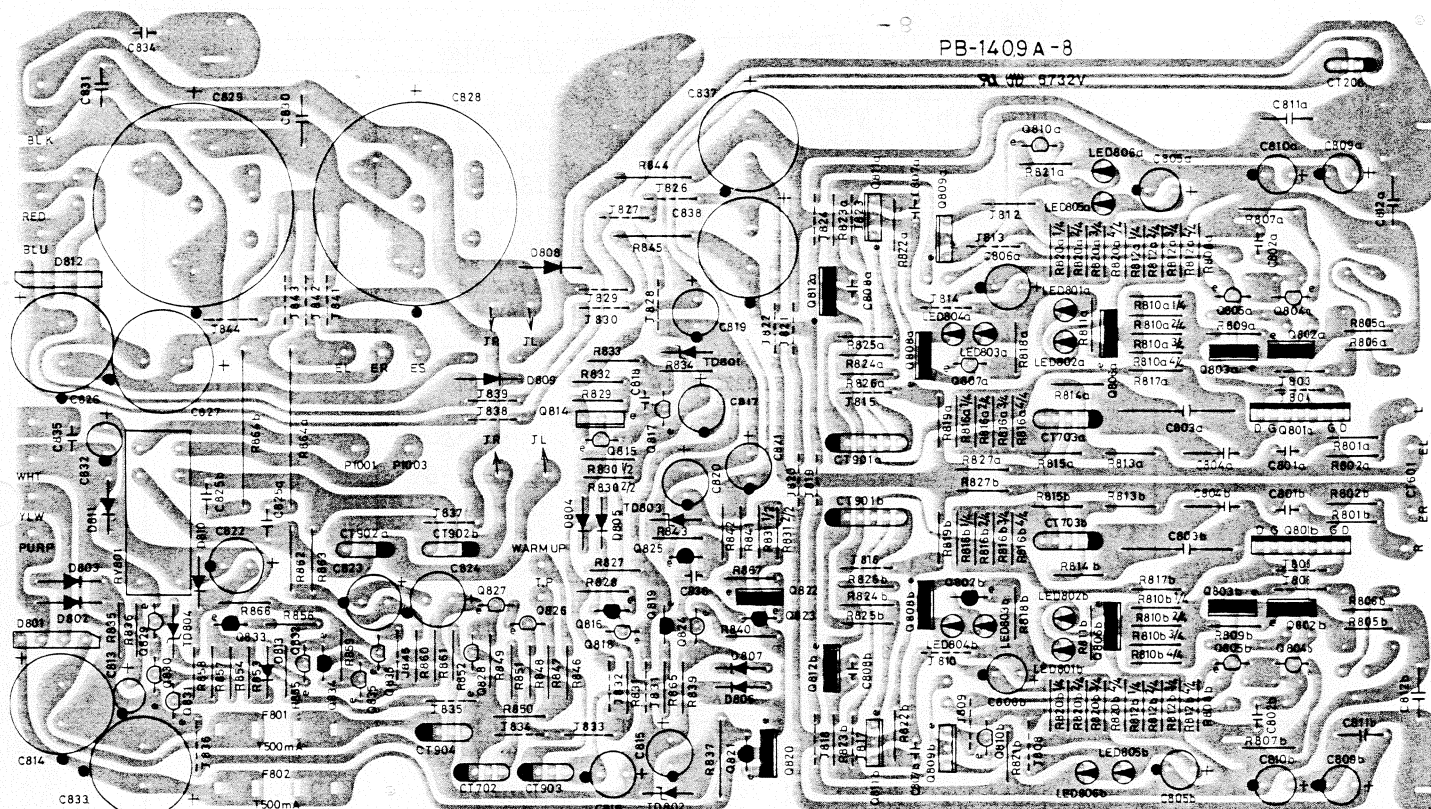
Symbol No.	Stock No. L410	Stock No. L430	Description
(Fuse Holder)			
	AH0028	AH0028	23165102-C (S)
	AH0029	AH0029	YSH-401T (E)
(Fuse)			
F001	BF0118	BF0118	MF60NR-4A (EK)
	BF0212		5120 3.15AT (SK)
		BF0213	5x20 4A (T) (S)
	BF0082		ULCS-MF61ML-5A (EZ)
		BF0083	ULCS-MF61ML-6A (EZ,U)
(Capacitor)			
C002	CU0080	CU0080	0.0047uF 400V

PB-1409-5



PB-1409A-5 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Switch)			
SW501-505	SP0282	SP0282	Push SUF53



PB-1409A-8 Parts List

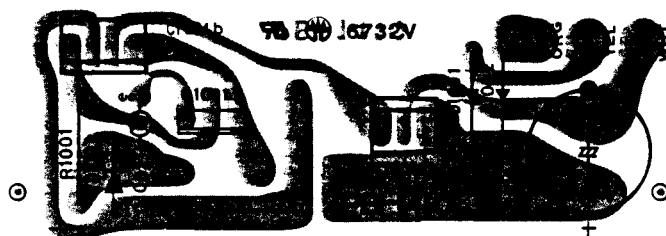
Symbol No.	Stock No. L410	Stock No. L430	Description
(Fuse Holder)			
	AH0028	AH0028	23165102-C
(Fuse)			
F801	BF0206	BF0206	5x20 0.5A-T (S)
	BF0308	BF0308	MF51NR-0.5A (F, J, U)
F802	BF0206	BF0206	5x20 0.5A-T (S)
	BF0308	BF0308	MF51NR-0.5A (E, J, U)
***		BF0208	5x20 1A-T (S)
***		BF0305	MF51NR-1.5A (E)

Symbol No.	Stock No. L410	Stock No. L430	Description
(Relay)			
RY801	AY1023	AY1023	VB-24MC
(Transistor & FET)			
Q801a,b	TF0035	TF0035	2SK270 Dual FET
Q802a,b	TR0342	TR0342	2SA899-BV
Q803a,b	TR0342	TR0342	2SA899-BV
Q804a,b	TR0351	TR0351	2SC2320
Q805a,b	TR0351	TR0351	2SC2320
Q806a,b	TR0342	TR0342	2SA899-BV
Q807a,b	TR0314	TR0314	2SA999
Q808a,b	TR0342	TR0342	2SA899-BV
Q809a,b	TR0318	TR0318	2SC1904-BV
Q810a,b	TR0351	TR0351	2SC2320
Q811a,b	TR0318	TR0318	2SC1904-BV
Q812a,b	TR0342	TR0342	2SA899-BV
Q814	TR0159	TR0159	2SD415
Q815	TR0351	TR0351	2SC2320
Q816	TR0314	TR0314	2SA999
Q817	TR0351	TR0351	2SC2320
Q818	TR0351	TR0351	2SC2320
Q819	TR0314	TR0314	2SA999
Q820	TR0158	TR0158	2SB549
Q822	TR0158	TR0158	2SB549
Q823	TR0314	TR0314	2SA999
Q824	TR0351	TR0351	2SC2320
Q825	TR0314	TR0314	2SA999
Q826	TR0351	TR0351	2SC2320
Q827	TR0351	TR0351	2SC2320
Q828	TR0351	TR0351	2SC2320
Q829	TR0351	TR0351	2SC2320
Q830	TR0351	TR0351	2SC2320
Q831	TR0351	TR0351	2SC2320
Q832	TR0351	TR0351	2SC2320
Q833	TR0314	TR0314	2SA999
Q834	TR0314	TR0314	2SA999
Q835	TR0351	TR0351	2SC2320
Q836	TR0351	TR0351	2SC2320
(Diode)			
D801	TD0137	TD0137	SlVB10 Bridge
D802	TD0002	TD0002	1N4002
D803	TD0002	TD0002	1N4002
D805	TD0227	TD0227	1SS41
D806	TD0227	TD0227	1SS41
D807	TD0227	TD0227	1SS41
D808	TD0002	TD0002	1N4002
D809	TD0002	TD0002	1N4002
D810	TD0227	TD0227	1SS41
D811	TD0227	TD0227	1SS41
D812	TD0139	TD0139	SlVB20 Bridge
D813	TD0227	TD0227	1SS41
(Resistor)			
D804	RB0170	RB0170	330 1/4W Rd

Symbol No.	Stock No. L410	Stock No. L430	Description
(Zener Diode)			
TD801	TD0043	TD0043	WZ-130
TD802	TD0085	TD0085	WZ-230
TD803	TD0043	TD0043	WZ-130
TD804	TD0060	TD0060	WZ-061
(LED)			
LED801a,b	TD0238	TD0238	TLR124
LED802a,b	TD0238	TD0238	TLR124
LED803a,b	TD0238	TD0238	TLR124
LED804a,b	TD0238	TD0238	TLR124
LED805a,b	TD0238	TD0238	TLR124
LED806a,b	TD0238	TD0238	TLR124
(Capacitor)			
C801a,b	CQ3017		100pF St
		CQ1403	100pF 50V St
C802a,b	CQ1441	CQ1441	6800pF 50V St
C803a,b	CQ5080		1500pF 50V St (E,S,U)
		CM0174	22000pF 100V My
C804a,b	CE1977B		4.7uF BP 50V E1
		CO0700	3.3uF 100V E1
C805a,b	CE1712	CE1712	220uF 10V E1
C806a,b	CE1712	CE1712	220uF 10V E1
C807a,b	CM0125	CM0125	47pF 500V Mi
C808a,b	CM0125	CM0125	47pF 500V Mi
C809a,b	CE1778	CE1778	22uF 100V E1
C810a,b	CE1778	CE1778	22uF 100V E1
C813	CE1750	CE1750	1uF 50V E1
C814	CE1748	CE1748	2200uF 35V E1
C815	CE1732		100uF 25V E1
		CE1733	220uF 25V E1
C816	CE1732	CE1732	100uF 25V E1
C817	CE1722		220uF 16V E1
		CE1952	220uF 16V E1
C819	CE1731	CE1731	47uF 25V E1
C820	CE1722	CE1722	220uF 16V E1
		CE1952	220uF 16V E1 (J)
C821	CE1731	CE1731	47uF 25V E1
C822	CE1713	CE1713	330uF 10V E1
C823	CE1714	CE1714	470uF 10V E1
C824	CE1714	CE1714	470uF 10V E1
C825a,b	CQ3063	CQ3063	0.047uF 100V Pp
C826	CE1794	CE1794	470uF 100V E1
C827	CE1794	CE1794	470uF 100V E1
C828	CE1032		15000uF 56V E1 (S,E,U)
	CE4098		15000uF 55V E1 (J)
		CE1031	15000uF 63V E1 (S,E)
		CE4097	15000uF 63V E1 (J,U)
C829	CE1032		15000uF 56V E1 (S,E,U)
	CE4098		15000uF 55V E1 (J)
		CE1031	15000uF 63V E1 (S,E)
		CE4097	15000uF 63V E1 (J,U)
C832	CE1749	CE1749	0.47uF 50V E1
C833	CE1748	CE1748	2200uF 35V E1
C834	CK0140	CK0140	0.047uF 50V Ce
C835	CK0140	CK0140	0.047uF 50V Ce
C837	CE1794	CE1794	470uF 100V E1
C838	CE1794	CE1794	470uF 100V E1

PB-1409A-8 Parts List

Symbol No.	Stock No. L410	Stock No. L430	Description
(Resistor)			
R801a,b	RB0174	RB0174	470 1/4W Rd
R802a,b	RB0252	RB0252	820K 1/4W Rd
R804		RB0170	330 1/4W Rd
R805a,b	RB0224	RB0224	56K 1/4W Rd
R806a,b	RB0224	RB0224	56K 1/4W Rd
R806		RB0170	330 1/4W Rd
R807a,b	RB0160	RB0160	120 1/4W Rd
R808a,b	RB0160	RB0160	120 1/4W Rd
R809a,b	RB0186	RB0186	1.5K 1/4W Rd
R810a,b	RB0204		8.2K 1/4W Rd
		RB0208	12K 1/4W Rd
R811a,b	RB0170	RB0170	330 1/4W Rd
R812a,b		RB0238	240Kx4 1/4W Rd
R813a,b	RB0142	RB0142	22 1/4W Rd
R814a,b	RB0254	RB0254	1M 1/4W Rd
R815a,b	RB0154	RB0154	68 1/4W Rd
R816a,b	RB0203		7.5Kx4 1/4W Rd
		RB0208	12Kx4 1/4W Rd
R817a,b	RB0270	RB0270	4.7M 1/4W Rd
R818a,b	RB0166	RB0166	220 1/4W Rd
R819a,b		RB0270	4.7M 1/4W Rd
R820a,b	RB0236		180K 1/4W Rd
		RB0238	220Kx4 1/4W Rd
R821a,b	RB0236		180K 1/4W Rd
		RB0238	220K 1/4W Rd
	RB0166		220 1/4W Rd
R822a,b	RS1849	RS1849	100 1/4W Rf
R823a,b	RS1849	RS1849	100 1/4W Rf
R825a,b	RS1849	RS1849	100 1/4W Rf
R826a,b	RS1849	RS1849	100 1/4W Rf
R827	RB0208	RB0208	12K 1/4W Rf
R828	RB0176	RB0176	560 1/4W Rd
R830 1/2	RB0194	RB0194	3.3K 1/4W Rd
R830 2/2	RB0182		1K 1/4W Rd
		RB0192	2.7K 1/4W Rd
R831 1/2	RB0194	RB0194	3.3K 1/4W Rd
R831 2/2	RB0182		1K 1/4W Rd
		RB0192	2.7K 1/4W Rd
R832	RS1849	RS1849	100 1/4W Rd
R833		RB0220	39K 1/4W Rd
R834	RB0208		12K 1/4W Rd
		RB0216	27K 1/4W Rd
R835	RB0208	RB0208	12K 1/4W Rd
R836	RB0208	RB0208	12K 1/4W Rd
R837	RS2524	RS2524	1K 1/2W Rf
R839	RB0208	RB0208	12K 1/4W Rd
R840	RB0176	RB0176	560 1/4W Rd
R841	RS1825	RS1825	10 1/4W Rf
R842	RB0194	RB0194	3.3K 1/4W Rd
R843	RB0208		12K 1/4W Rd
		RB0216	27K 1/4W Rd
R844	RS1849	RS1849	100 1/4W Rf
R845	RS1849	RS1849	100 1/4W Rf
R846	RB0238	RB0238	220K 1/4W Rd
R847	RB0270	RB0270	4.7M 1/4W Rd
R848	RB0206	RB0206	10K 1/4W Rd
R849	RB0206	RB0206	10K 1/4W Rd
R850	RB0198		4.7K 1/4W Rd
		RB0270	4.7M 1/4W Rd
R851	RB0206	RB0206	10K 1/4W Rd
R852	RB0136	RB0136	12 1/4W Rd
R853	RB0196	RB0196	3.9K 1/4W Rd
R854	RB0208	RB0208	12K 1/4W Rd
R855	RB0206	RB0206	10K 1/4W Rd
R856	RB0206	RB0206	10K 1/4W Rd
R857	RB0224	RB0224	56K 1/4W Rd
R858	RB0150	RB0150	47 1/4W Rd
R859	RB0206	RB0206	10K 1/4W Rd
R860	RB0194	RB0194	3.3K 1/4W Rd
R861	RB0198	RB0198	4.7K 1/4W Rd
R862	RD2602	RD2602	6.8K 1/2W Rd
R863	RD2602	RD2602	6.8K 1/2W Rd
R864a,b	RS5013	RS5013	22 3W Rf
R866	RB0206	RB0206	10K 1/4W Rd



PB-1410 Parts List

Symbol NO.	Stock No. L410	Stock No. L430	Description
(Transistor)			
Q1001	Non Use	TR0159	2SD415 (J)
Q1002	Non Use	TR0351	2SC2320 (J)
(Diode)			
D1001	Non Use	TD0002	1N4002 (J)
D1002	Non Use	TD0002	1N4002 (J)
(Zener)			
TD1001	Non Use	TD0085	WZ-230 (J)
(Capacitor)			
C1001	Non Use	CE1747	1000uF 35V E1 (J)
(Resistor)			
R1001	Non Use	RS2524	1K 1/2W Rf (J)

Remarks

Capacitor: El.....Electrolytic, Ce.....Ceramic, My.....Mylar,
Pp.....Polypropylene, Mi.....Mica, St.....Styrol.

Resistor : Rd.....Carbon, Rm.....Metal Film, Rf.....Flame Proof.

*In this manual the parts, which differs depending on destination and mains voltage, are classified indicated as follow:

SK,SD,EK: 220V For Europe, South East Asia.

SG,SB,EG: 240V For England, Oceania

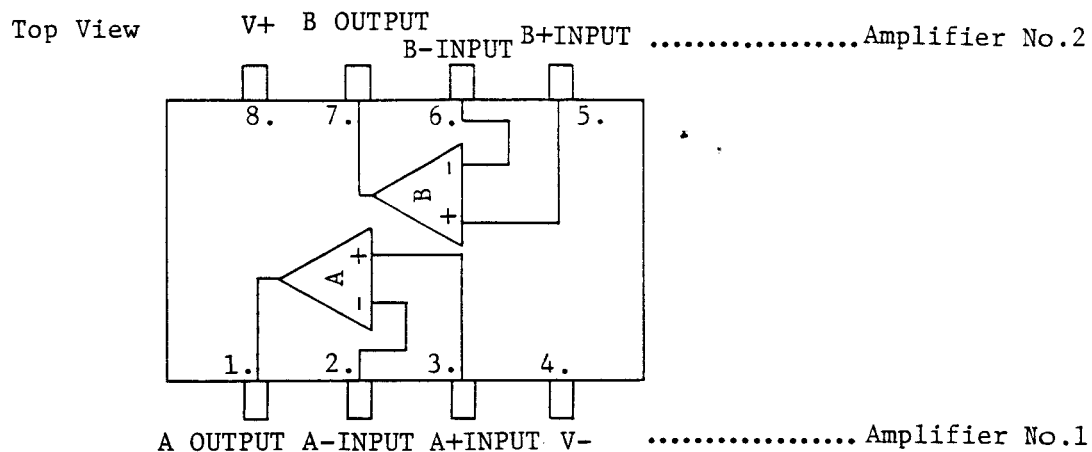
EZ,UP : 120V For Noth America, South East Asia

J : 100V For Japan

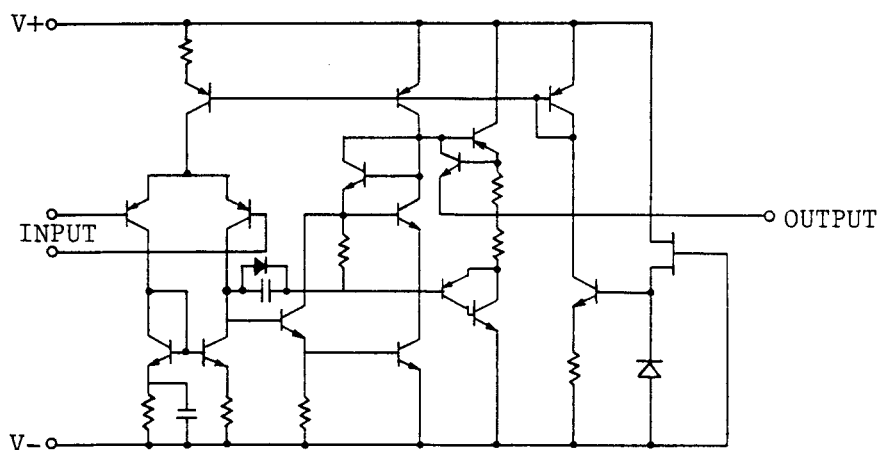
***E Type all with line voltage selector

IC Handling Guide

IC NJM4556D-H (Stock No. TC0187)
(Dual High Current Operational Amplifier)



Equivalent Circuit (1/2)



Note

Power Transistor (Complementary Pair)

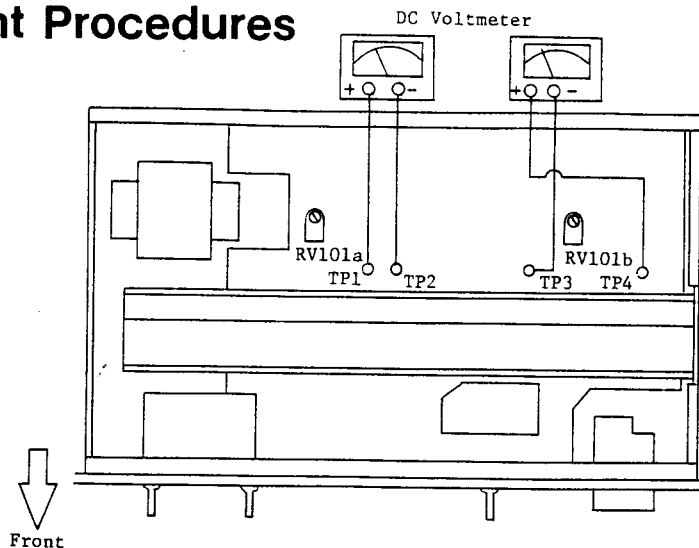
L-410 (Symbol No. Q903a,b & Q904a,b)

2SC3182		2SC2706
2SA1265	or	2SA1146 (First Lot)

L-430 (Symbol No. Q903a,b Q905a,b Q904a,b Q906a,b)

2SC3182		2SC2706
2SA1265	or	2SA1146 (First Lot)

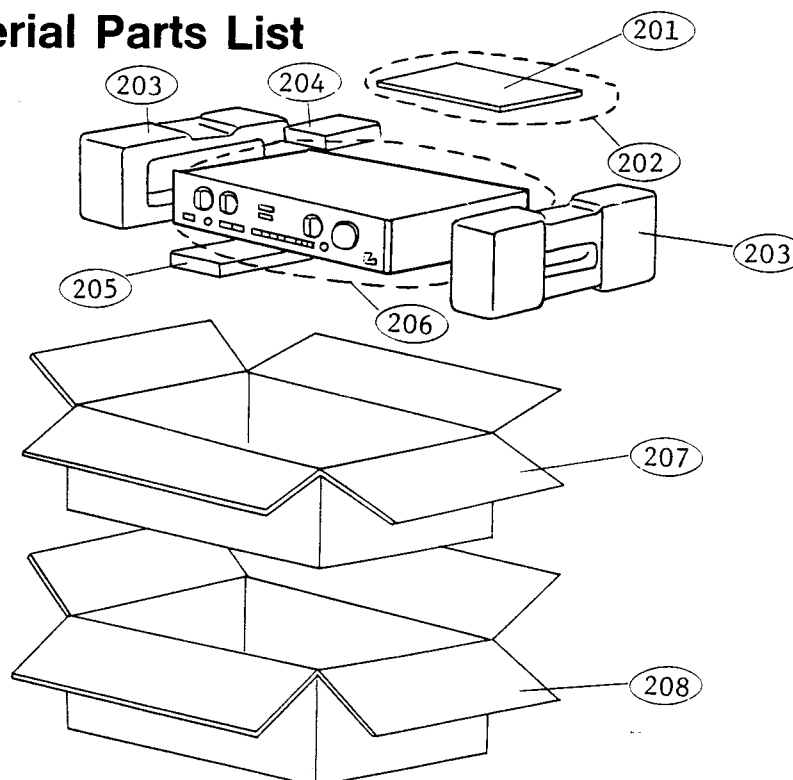
Adjustment Procedures



Bias (Idle) Current Adjustment

1. Connect a DC Voltmeter in between TP1 and TP2 on L-ch and or TP4 and TP3 on R-ch, Making TP1 and TP4 positive respectively.
2. Adjust the RV101a and RV101b to obtain $15\text{mV} \pm 5\text{mV}$ reading on the meter.

Packing Material Parts List



Symbol No.	Stock No. L-230	Stock No. L-400	Description
201	ME0253-2	MA0163	Owner's Manual
202	56B40230G21	56B40230G21	Sack, Poly
203	56C56637F01	56C56637F01	Pkg, Tray
204	56A58581F01	56A58581F01	Pad, Pkg
205	56A57423F04	56A57423F04	Pad, Pkg
206	56B40230G23	56B40230G23	Sack, Poly
207	56C53420F32	56C53420F42	Carton, Pkg
208	56C53420F26	Non Use	Carton, Bulk Pkg

